CLAIMS

WE CLAIM

1. A slider assembly comprising a plurality of sliders bonded by a debondable solid encapsulant, wherein the encapsulant is comprised of styrene and butadiene polymers, each slider has a surface that is free from the encapsulant, and the encapsulant-free surfaces are coplanar to each other.

2. The slider assembly of claim 1, having a contiguous planar surface comprised of at least one encapsulant region and containing the coplanar slider surfaces.

3. The slider assembly of claim 2, wherein the sliders are arranged in an array.

4. The slider assembly of claim 3, wherein the array is a rectilinear array.

5. The slider assembly of claim 4, wherein the sliders do not contact each other.

6. The slider assembly of claim 4, wherein the coplanar surfaces of the sliders are each an air-bearing surface.

7. The slider assembly of claim 6, further comprising a substrate in contact with the air-bearing surfaces.

8. The slider assembly of claim 7, wherein the substrate is comprised of a laminate of a flexible tape and an adhesive, wherein the adhesive is in contact with the air-bearing surfaces.

9. The slider assembly of claim 8, wherein the adhesive is a pressure sensitive adhesive.

10. The slider assembly of claim 8, wherein the adhesive preferentially adheres to the tape over the air-bearing surfaces.

11. The slider assembly of claim 4, wherein the encapsulant does not substantially outgas under vacuum.

12. The slider assembly of claim 4, further comprising a carrier attached to the encapsulant and/or at least one slider, wherein the carrier does not cover any of the coplanar slider surfaces.

13. The slider assembly of claim 6, further comprising a resist layer on the air-bearing surfaces, wherein the encapsulant is mechanically stable upon exposure to the resist layer or any component thereof.

14. The slider assembly of claim 13, wherein the encapsulant is subject to solvation by a solvent not found in the resist layer.

15. The slider assembly of claim 14, wherein the solvent is comprised of a nonpolar solvent.

16. The slider assembly of claim 4, wherein the styrene polymer is a hydrogenated styrene copolymer.

17. The slider assembly of claim 16, wherein the hydrogenated styrene copolymer has a softening temperature of about 70°C to about 150°C.

18. The slider assembly of claim 17, wherein the softening temperature is at least about 130°C.

19. The slider assembly of claim 4, wherein the styrene and butadiene polymers are present is a weight ratio of about 19:1 to about 17:3.

20. The slider assembly of claim 19, wherein the styrene and butadiene polymers are present in a weight ratio of about 9:1.

21. A method for forming a slider assembly, comprising:

(a) arranging a plurality of sliders each having a surface such that the surfaces are coplanar to each other;

(b) dispensing an encapsulation fluid comprised of styrene and butadiene polymers in a manner effective to bond or encapsulate the sliders without contacting the coplanar slider surfaces; and

(c) subjecting the dispensed encapsulation fluid to conditions effective for the fluid to form a debondable solid encapsulant comprising styrene and butadiene polymers.

22. The method of claim 21, wherein step (a) comprises placing the sliders on a laminate of a tape and an adhesive such that slider surfaces contact the adhesive.

23. The method of claim 22, wherein the adhesive is resistant or impervious to solvation by the encapsulation fluid.

24. The method of claim 21, wherein the encapsulation fluid is further comprised of a solvent.

25. The method of claim 24, wherein the solvent represents about 30 wt% to about 50 wt% of the encapsulation fluid as dispensed.

26. The method of claim 25, wherein the solvent represents about represents about 40 wt% to about 45 wt% of the encapsulation fluid as dispensed.

27. The method of claim 24, wherein step (c) comprises heating the encapsulation fluid to remove solvent therefrom.

28. The method of claim 27, wherein step (c) subjecting the encapsulation fluid to a temperature of at least about 140 °C.

29. A method for patterning an air-bearing surface of a slider, comprising:

(a) applying a resist layer on an air-bearing surface of a slider, wherein at least a portion of the slider other than the air-bearing surface is encapsulated in a debondable solid encapsulant comprising styrene and butadiene polymers;

(b) removing a portion of the resist composition to uncover a portion of the air-bearing surface in a patternwise manner; and

(c) adding material to and/or removing material from the exposed portion of the air-bearing surface, thereby patterning the air-bearing surface of the slider,

wherein the encapsulant is mechanically stable upon exposure to any fluid employed in steps (a), (b), and/or (c).

30. The method of claim 29, further comprising, after step (a) and before step (b), exposing the resist layer to photons in the patternwise manner.